TRANSFORMATIONS OF THE LABOR MARKET IN POSTWAR JAPAN*

By RYOSHIN MINAMI**

It is widely believed that Japan had succeeded in transition from a labor surplus to a labor shortage economy by the end of the 1950's or the beginning of the next decade. Such a transformation in the labor market, which is the first experience in Asian countries including Japan, is worthy of special attention. In Section I we will study the process of transformation in the labor market by examining employment and wage statistics. Theoretically, transition from a labor surplus to a labor shortage economy may stem from either or both of two factors: a decrease in labor supply, and an increase in labor demand. In Section II we will test which of the two has been much more influential. Furthermore, in this section, we will examine output and employment statistics by industry group and, by so doing, clarify the sources of increasing demand for labor. Section III summarizes our discussions and conclusions.

I. *Changes in the Excess Demand for Labor*

Rate of Unemployment and Other Indexes for Excess Demand for Labor

One of the most popular indexes for the excess demand for labor is the rate of unemployment, i.e., the ratio of totally unemployed persons to total labor force. It is available from the *Labor Force Survey*. As is shown in Chart 1, it was only 2.5 per cent in 1955 when it was at the highest level and has been 1.1 per cent during 1969–70. That is to say, the rate of unemployment in Japan is very low compared with the rate in the United States (around 5–6 per cent) where the labor force survey is conducted in almost the same manner as in this country. This may be partly dependent on the fact that the employment structure in Japan is such that unpaid family workers still constitute a considerable part of the labor force. A ratio of these workers to total labor force amounts to 15.6 per cent in 1970 according to the *Labor Force Survey*. If we calculate a rate of total unemployed persons to ' employees ' it becomes 1.8 per cent in 1970. It is higher by 0.7 per cent than the rate of unemployment to total labor force. We are not interested here, however, in the level of the unemployment rate, but in the change in this rate over time. A decreasing trend in this rate during the eight years from 1955 to 1963 may be very impressive to the readers. It declined by 1.8 per cent from 2.5 per cent (1955) to 1.1 per cent (1963).

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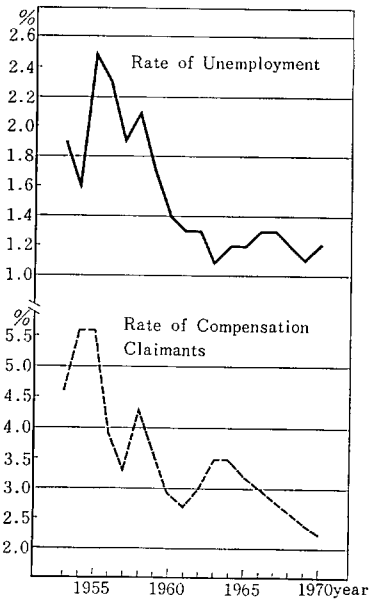
CHART 1. RATE OF UNEMPLOYMENT AND RATE OF COMPENSATION CLAIMANTS



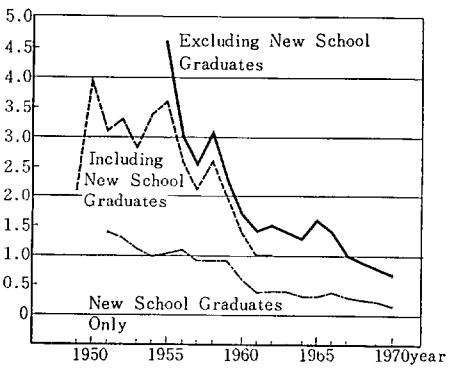
Remarks: Rate of unemployment=totally unemployed persons÷total labor force×100.
Rate of compensation claimants=compensation claimants÷(insured persons+compensation claimants)×100.

Sources: Rate of unemployed; the *Rōdōryoku Chōsa* (*Labor Force Survey*) by the *Sōri-fu, Tōkei Kyoku* (Bureau of Statistics, Office of the Prime Minister).
Rate of compensation claimants; the *Shitsugyō Hoken Jigyō Tōkei* (*Report of Unemployment Insurance Statistics*) by the *Rōdō-shō* (Ministry of Labor).

The Unemployment Insurance Statistics also present a good index for the excess demand for labor. It is the rate of compensation claimants or a ratio of compensation claimants to the total of insured persons and of compensation claimants. As is shown in Chart 1, this rate shows a big decline during 1955–61.

Both of the two rates in Chart 1 have a common defect as an index for excess demand

CHART 2. RATIO OF APPLICATIONS TO OPENINGS



Remarks: Ratio of monthly active applications to monthly active openings. Monthly active applications mean monthly average of new applications during the month and applications not placed at the end of the previous month. Monthly active openings signify monthly average of new openings during the month and openings not filled at the end of the previous month.

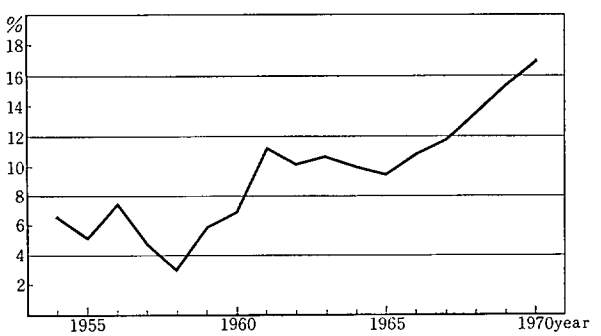
Sources: The *Shokugyō Antei Gyōmu Tōkei* (*Report of Employment Exchange Activities*), which is available from *Rōdō-shijō Nenpō* (*Annual Report of Labor Market*) by *Rōdō-shō, Shokugyō Antei-kyoku* (Bureau of Employment Security, Ministry of Labor).

for labor. It is in that these statistics survey only *ex post* differences between demand for and supply of labor. Information on *ex ante* differences between them are available from the *Report of Employment Exchange Activities*. Statistics from this survey, therefore, may be considered to provide much better indexes for excess demand for labor, although this survey does not cover that portion of the labor force who do not find their jobs through the public employment security offices. In Chart 2 a ratio of applications to openings is calculated from the results of this survey and depicted. Because the number of applications and that of openings stand for the size of the labor supply and that of the labor demand respectively, this ratio may be the best index for excess demand for labor. Two things can be observed:
(1) The ratio for all laborers and the ratio for the labor force excluding new school graduates have decreased considerably from 1955 to 1961. The ratio for all laborers became less than unity in 1962.
(2) The ratio for new school graudates became less than unity eleven years before the ratio for the other laborers did; 1957 for the former and 1968 for the latter.
Fact (1) signifies that the excess demand for labor increased to a great extent during 1955–61. And as far as the laborers who found jobs through public employment security offices were concerned, demand for them began to exceed supply of them in 1962. Fact (2) suggests that the transition from a labor surplus to a labor shortage economy was made in the fresh young workers at first and later in the other laborers, with a lag.

Rate of Growth in Nominal Wage Rate

Generally speaking, an increase in the excess demand for labor tends to increase the rate of growth in the nominal wage rate. Such a relationship, which is widely known as a wage adjustment function or the Phillips curve, can be naturally expected to be found in this country.[1] It is because in this country the bargaining power of trade unions in wage negotia-

CHART 3. ANNUAL RATE OF GROWTH IN WAGE INDEX IN NON-PRIMARY



Remarks: Statistics are for the establishments with thirty and more regular employees in all industries excluding primary.
Wages are dependent on average total cash earnings, including special cash payments.
Index is computed, adjusting gaps caused by changes in sample establishments every three years.
Sources: The *Maigetsu Kinrō Tōkei* (*Monthly Labor Survey*) by the Ministry of Labor.

[1] Phillips curves in this country have been estimated by some authors. For instance, Akira Ono, "*Sengo ni okeru Kibokan Chingin Kakusa* (Wage Differentials by the Scale of Establishments in the Postwar Period)," in *Nippon Keizai no Kōzō Hendō to Yosoku* (*Structural Changes and Forecasting in the Japanese Economy*), ed. by Isamu Yamada, Kōichi Emi and Toshiyuki Mizoguchi (Tokyo: *Shunjū-sha*, 1969). *Keizai Kikaku-chō, Keizai Kenkyū-jo* (Economic Research Institute, Economic Planning Agency), *Chingin Hendō-Yōin no Kenkyū* (*Studies on Wage Changes*) (Tokyo: *Ōkura-shō, Insatsu-kyoku* (Printing Bureau, Ministry of Finance), 1969). Ryoshin Minami and Kōnosuke Odaka, *Chingin Hendō* (*Wage Fluctuations*) (Tokyo: *Iwanami Shoten*, 1972).

tions is not as strong as in other developed countries like the United States. Then we may be able to tell how the excess demand for labor has changed by investigating the changes in the rate of growth in the wage rate.

The annual rate of growth in the wage index for non-primary employment is calculated from the *Monthly Labor Survey* and is shown in Chart 3. As is easily seen, the rate of growth increased from 3.1 per cent (in 1958) to 13.8 per cent (in 1961). Such an increase during this period can be taken as a result of a big increase in the excess demand for labor. The rate of growth declined thereafter and reached to a trough (5.9 per cent) in 1966. Thereafter, the rate began to show a spurt again and reached a peak in 1969 (17.2 per cent). The decline during 1961–66 and the subsequent increase were dependent upon the changes in the excess demand for labor.[2] Because of the existence of these short term fluctuations in the rate of wage increase, it is not so easy to deduce a structural change in the labor market by using this series. It cannot be denied, however, that a big increase in the rate of growth in the wage rate during 1958-61 was a sign of such a structural change.

Wage Differentials

It may be very important to point out that an increase in wage rate has been much larger for unskilled (or low-wage) workers than for skilled (or high-wage) workers. In other words, wage differentials between these workers have decreased. Chart 4 depicts real wage indexes for agriculture and for non-primary (1965=100). They are obtained by dividing wage indexes by the consumer price index (1965=100). The wage index for agriculture is calculated

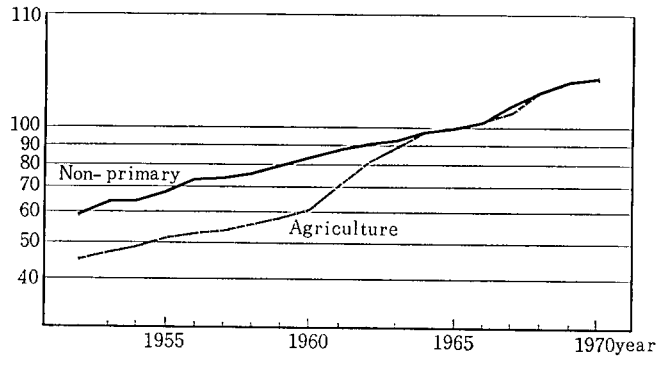
[2] Followings are the results of estimation of Phillips curves. $\dot{w}$ is calculated from the data used in Chart 3. U_1 and U_2 indicate the rate of unemployment and the rate of compensation claimants respectively both depicted in Chart 1. U_3 and U_4 refer to the ratio of applications to openings in Chart 2, respectively for new school graudates and for other laborers. (Figure of U_4 for 1954 is estimated by linking it with the series which is noted with 'Including New School Graduates' in Chart 2.) Estimation period is 1954-69. Years before 1954 are excluded in order to get better results.

Estimates of Phillips Curves
($\dot{w}=a+b/U$)

Constants	Parameters of				$\bar{R}_2$	d
	$1/U_1$	$1/U_2$	$1/U_3$	$1/U_4$		
−3.94 (−1.54)	18.96 (5.37)				0.64	0.84
−4.04 (−1.65)		43.35 (5.65)			0.66	0.72
3.86 (5.33)			2.08 (9.05)		0.83	1.70
2.43 (3.47)				10.24 (11.21)	0.89	1.34

Figure in parenthesis indicates t-value of a parameter. $\bar{R}^2$ is a determination coefficient adjusted by the degree of freedom. 'd' stands for Durbin-Watson statistics. According to this table we got the best result when we used U_4 as an index for the excess demand for labor.

CHART 4. REAL WAGE INDEXES FOR AGRICULTURE AND FOR NON-PRIMARY INDUSTRIES (1965=100)



Remarks: Wage indexes (1965 =100)÷consumer price index (1965 =100)×100.

Sources: The wage index for agriculture is calculated from the daily wages for agricultural daily workers which are available from the *Nōson Bukka Chingin Chōsa* (*Statistics of Prices and Wages in Rural Villages*) by the *Nōrin-shō* (Ministry of Argiculture and Forestry).

For the wage index of non-primary, see Chart 3.

The consumer price index is compiled by the Bureau of Statistics.

from daily wages for agricultural daily workers,[3] which are available from the *Statistics of Wages and Prices in the Rural Villages*. The wage index for non-primary employment is the same as the index which was used in Chart 3. One may easily see that the real wage index in agriculture has increased much faster than those in non-primary.[4] Thus a ratio of agricultural wage index to non-primary index, which is demonstrated in Chart 5, has increased conspicuously during 1960–64.

[3] Comprehensive studies on the agricultural wages are included in Ryoshin Minami, " Further Considerations on the Turning Point in the Japanese Economy (I)," *Hitotsubashi Journal of Economics*, Vol. X, No. 2 (Feb. 1970) and " . . . (II)," *H.J.E.*, Vol. XI, No. 1 (June 1970).

[4] Annual rates of growth in the real wages are calculated and shown in the table below:

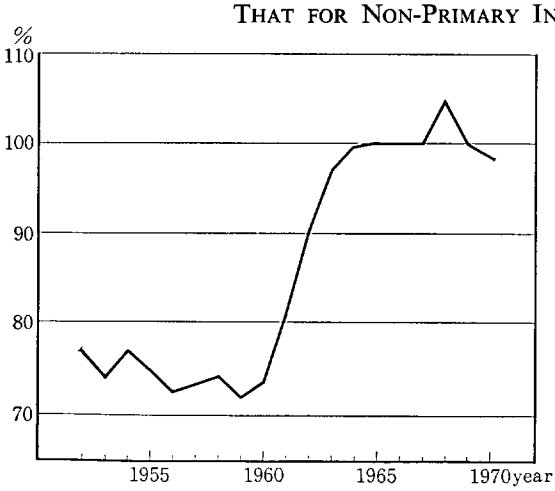
Annual Rate of Growth in Real Wages

Periods	(1) Agriculture	(2) Non-Primary	(3) Manufacturing			
			Non-Production Workers		Non-Production Workers	
			Male	Female	Male	Female
1950–55	—	—	—	—	—	—
1955–60	3.9	4.4	3.9	2.7	3.2	3.0
1960–65	12.9	4.2	1.7	4.7	3.0	6.4
1965–70	8.5	9.1	7.1	8.1	8.9	8.1

(4) Manufacturing			
5—29 Employees	30—99 Employees	100—499 Employees	500 and More Employees
—	4.9	5.2	4.9
—	5.6	4.5	5.7
9.7	6.2	4.9	1.8
9.7	9.8	10.6	10.3

Sources: For (1) and (2) see Chart 4. For (3) see Chart 6. For (4) see Chart 8.

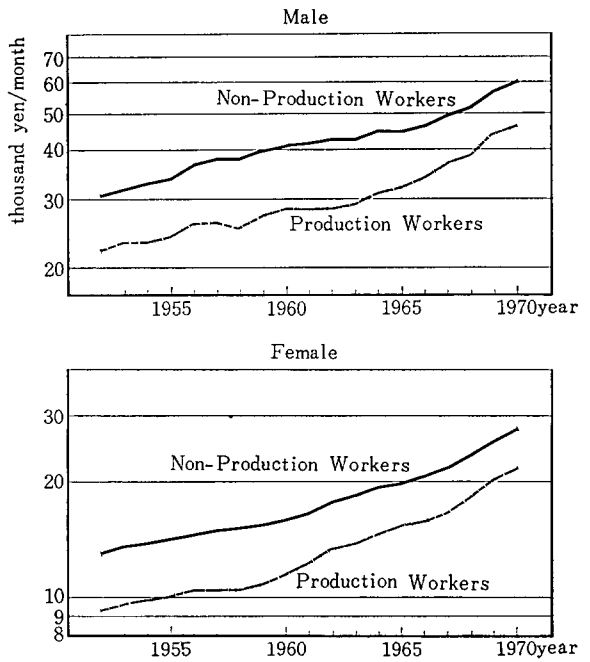
CHART 5. RATIO OF WAGE INDEX FOR AGRICULTURE TO THAT FOR NON-PRIMARY INDUSTRIES (1965=100)



Remarks: Wage index for agriculture÷wage index for non-primary×100
Sources: For the wage indexes, see Chart 4.

Chart 6 demonstrates the contract cash earnings deflated by the consumer price index for two types of workers: production workers and non-production workers, both in manufacturing industries. For both sexes the real wages increased much faster for production workers than for non-production workers during the years since 1958 through 1969.[5] That

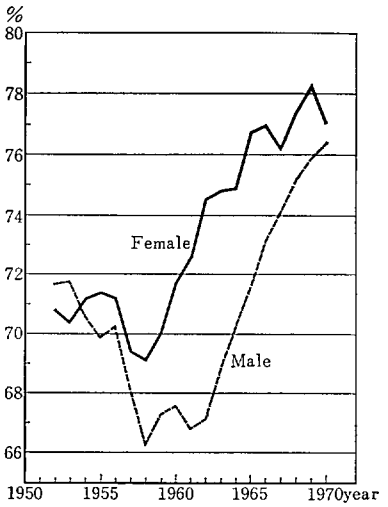
CHART 6. REAL WAGES OF PRODUCTION AND NON-PRODUCTION WORKERS IN MANUFACTURING INDUSTRIES (IN 1965 PRICES)



Remarks: Wage statistics are based on monthly contract cash earnings for the workers in the establishments with thirty and more regular employees.
Sources: *The Monthly Labor Survey.*

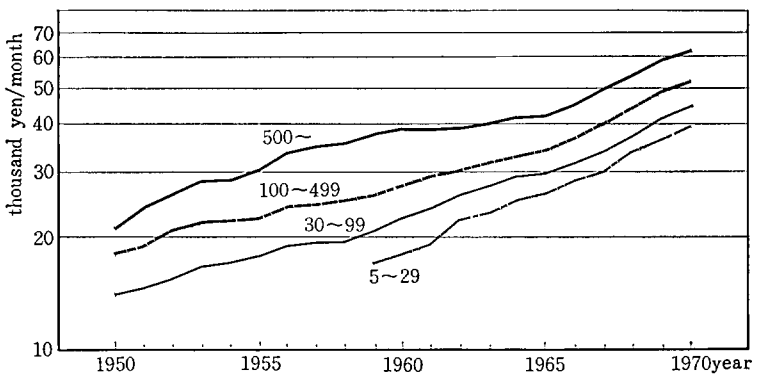
[5] See footnote 4.

CHART 7. RATIO OF PRODUCTION WORKER WAGES TO NON-PRODUCTION WORKER WAGES IN MANUFACTURING INDUSTRIES



Remarks: Wages for production workers÷wages for non-production workers×100.
Sources: For the wage statistics, see Chart 6.

CHART 8. REAL WAGES BY SIZE OF ESTABLISHMENTS IN MANUFACTURING INDUSTRIES (IN 1965 PRICES)



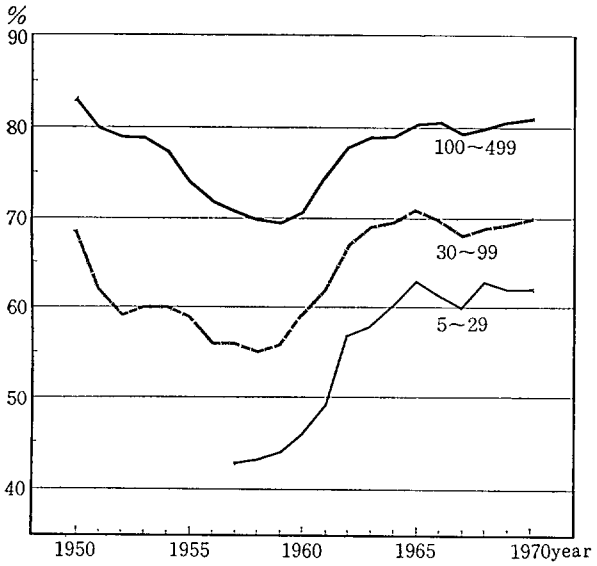
Remarks: Wage statistics are based on monthly total cash earnings.
Sources: The *Monthly Lobor Survey*.

is, a ratio of production worker wages to non-production worker wages shows a remarkable increasing trend during this period in Chart 7.

Chart 8 shows the total cash earnings, in 1965 prices, by size of establishments: the establishments with 5–29 regular employees, those with 30–99 employees, those with 100–499 employees and those with 500 and more employees, all for manufacturing industries. One may see that the rate of growth in real wages was much higher in smaller scale establishments since around 1958 through 1965.[6] Chart 9 shows that ratios of wages for the establishments with less than 500 employees to those with 500 and more employees increased during these years. Such a decrease in wage differential was the most remarkable for the smallest establishments with 5–29 employees.

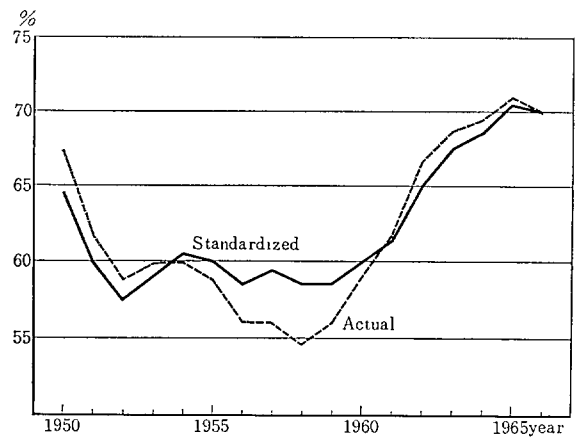
[6] See footnote 4.

CHART 9. WAGE RATIOS OF SMALLER SCALE ESTABLISHMENTS TO ESTABLISHMENTS WITH FIVE HUNDRED AND MORE EMPLOYEES



Remarks: Wages for smaller scale establishments÷wages for the largest establishments with five hundred and more regular employees×100.
Sources: See Chart 8.

CHART 10. RATIO OF WAGES FOR SMALL SCALE ESTABLISHMENTS TO THOSE FOR LARGE SCALE ESTABLISHMENTS IN MANUFACTURING INDUSTRIES: ACTUAL AND STANDARDIZED



Remarks: Average wages of the establishments with thirty and more but less than ninety-nine regular employees÷those of the establishments with five hundred and more regular employees×100.
Wages are dependent on the total cash earnings per month. Standardized figures indicate the wages standardized respectively for industry groups, status (production *vs.* non-production workers), sexes and ages of employees.
Sources: Reproduction from Chart 3 on p. 207 of Akira Ono, *op. cit.*

The increase in the wage differential during the years before 1958, according to comprehensive studies by Professor Akira Ono,[7] partly stemmed from the changes in the composition of employees. He calculated standardized wages with respect to industry groups, status (production *vs.* non-production workers), sexes and ages for small establishments (with 30-99 regular employees) and for large establishments (with 500 or more employees).

[7] See footnote of Chart 10.

Chart 10 shows wage differentials between the two size of establishments, which are calculated from actual statistics and from Ono's standardized figures. According to this chart, an increase in the wage differential during the first half of the 1950's is not so big in the standardized figures as in the actual figures. That is, the wage differential was almost constant until the end of the 1950's after a sharp increase in the beginning of that decade.

As has been shown by this writer in previous papers,[8] wage differentials increased during the depression years of 1919–31 and decreased during boom years after this period. For the postwar era, we may consider the years up to 1954 and the years 1961–65 as downswing phases of economic activity and the years 1954–61 as an upswing phase. Therefore, it should be noted that the declining wage differentials (during 1958–65 in the case of the wage differentials by the size of establishments) continued even during the downward phase of 1961–65. Such a declining wage differential in the downward phase of long swings, the first experience in this economy, signifies that this phenomenon was related to a structural change in the labor market. By structural change, we mean a disappearance of the surplus labor which had existed in traditional sectors like agriculture and small non-agriculture establishments.[9] The disappearance of surplus labor was, in this writer's opinion, caused by the increasing excess demand for labor in the entire economy.

II. *An Appraisal of the Role of the Increasing Demand for Labor*

Rate of Population Increase and Rate of Economic Growth

In the previous section we saw that the excess demand for labor did increase to a great extent during the latter half of the 1950's and the beginning of the next decade. In this section we will clarify whether such a conspicuous increase in the excess demand for labor came from an decrease in the supply of labor or from an increase in the demand for labor.

It is very difficult to distinguish the supply of labor from the demand for labor in actual employment statistics. If we were to attempt to do this with any degree of precision, we would need to construct a comprehensive macro econometric model. Here let us be contented with usage of ' proxy ' variables for labor supply and those for labor demand. One of these variables for labor supply is the population aged fifteen years and over.[10] In Table 1 the size of this population and its annual rate of growth are calculated from the results of the *National Population Census.* The rate of growth is 1.3–1.5 per cent for the prewar era (1920–40), 2.0–2.1 per cent for 1947–60, 2.4 per cent for 1960–65, and 1.5 per cent for 1965–70. Here we should pay special attention to the fact that this rate of growth did not record any decrease for 1955–65. Another index for labor supply is the size of labor force. In the same table, the size of the labor force and its annual rate of growth are calculated from the *National Population Census.* It is 1.1–1.5 per cent for the prewar (1920–40) and 1.9–2.0 per cent for the postwar era (1947–70). That is, this rate did not decrease during 1955-65. Then one may safely state that there was no sign of a decrease in the rate of growth for the

[8] Ryoshin Minami, " Further Considerations . . . (II)," Section IV.

[9] Ryoshin Minami, " Further Considerations . . . (II)," p. 48.

[10] Changes in labor supply were comprehensively studied by Yoichi Okazaki in his book, *Nippon no Rōdō-ryoku Mondai* (*Labour Problems in Japan*) (Tokyo: *Kōbun-sha*, 1966).

TABLE 1. POPULATION AGED FIFTEEN YEARS AND OVER AND LABOR FORCE

Year	Population Aged Fifteen Years and Over		Labor Force	
	Number	Annual Rate of Growth	Number	Annual Rate of Growth
	(thousand persons)	(%)	(thousand persons)	(%)
1920	35 189	—	25 587	—
1930	40 522	1.52	28 282	1.05
1940	45 573	1.25	32 406	1.46
1947	50 528	—	34 322	—
1950	53 767	2.14	36 347	1.97
1955	59 477	2.12	40 027	2.02
1960	65 352	1.98	44 028	2.00
1965	73 109	2.37	48 269	1.93
1970	78 605	1.50	52 759	1.86

Remarks: Prewar figures for labor force are based on gainfully occupied population.
Sources: From the results of the *Kokusei Chōsa* (*National Population Census* by the *Sōri-fu, Tōkei-kyoku* (Bureau of Statistics, Office of the Prime Minister). BS, OPM, *Nippon no Jinkō: Shōwa 40-nen Kokusei Chōsa, Zenkoku To-dō-fu-ken Shi-ku-chō-son Jinkō Sōran, Zenkoku no Bu, Sono 1* (*Population of Japan: 1965 Population Census of Japan, Abridged Report, Series 1, Part 1* (Tokyo: Bureau of Statistics, 1970), p. 68 (Figures for 1970 are the provisional one's based on one per cent sample tabulation.)

TABLE 2. ANNUAL RATE OF GROWTH IN REAL *GDP*

Periods	Rate of Growth
1919 (*P*)—31 (*T*)	2.2
1931 (*T*)—38 (*P*)	7.3
1954 (*T*)—61 (*P*)	13.3
1961 (*P*)—65 (*T*)	9.8
1965 (*T*)—69 (*P*)	15.3

Remarks: (*P*) and (*T*) stand for peak and trough, respectively, in the long swings.
Sources: For the prewar year, *Keizai Kikaku-chō, Keizai Kenkyū-sho* (Research Institute of Economics Planning Agency), *Chōki Keizai Tōkei no Seibi Kaizen ni kansuru Kenkyū* (*Studies on Estimating Long-term Economic Statistics*) Vol. 3, (mineo. 1986), p. 18. For the postwar era, EPA, *Keizai Yōran, 1971* (*Economic Statistics Manual, 1971*), (Tokyo: Ōkura-shō Insatsu-kyoku, 1971), p. 2.

labor supply during the period with which we are concerned.

As one of proxy variables for the demand for labor we will use a rate of growth of real *GDP*. It is calculated in Table 2 for respective phases of long swings. Demarcation of phases is made here following the results of comprehensive studies by Professors Kazushi Ohkawa and Henry Rosovsky on economic fluctuations.[11] In this table one may find two facts:

[11] Kazushi Ohkawa and Henry Rosovsky, " Economic Fluctuations in Prewar Japan: A Preliminary Analysis of Cycles and Long Swings," *Hitotsubashi Journal of Economics*, Vol. 3 (Oct. 1962), pp. 10–33.
" Postwar Japanese Growth in Historical Perspective: A Second Look," in *Economic Growth: The Japanese Experience since the Meiji Era*, ed. by Lawrence R. Klein and Kazushi Ohkawa (Homewood, Illinois: Richard D. Irwin, Inc., 1968).

(1) The rate of growth has a tendency to increase during the up-swings (1931–38, 1954–61 and 1965–69) and to decrease during the down-swings (1919–31 and 1961–65).
(2) The rate of growth has been much higher for the postwar era phases than for the prewar phases.

As a result of these two facts, the rate of growth recorded the second highest level (13.3 per cent) during 1954–61. During this period, as was pointed out in the last section, the excess demand for labor increased rapidly. Such a correspondence between the rapid increase in real *GDP* and that in the excess demand for labor during 1954–61 indicates that the increasing excess demand for labor was probably dependent on a big increase in the demand for labor.

Number of Applications and Openings

As proxy variables for the supply of and the demand for labor, the number of applications and the number of job vacancies, respectively, are much better than population and real *GDP*, respectively. This may be true in spite of such a fact that these statistics are concerned with laborers who find their jobs through public employment offices. Chart 11 demonstrates the number of applications and the number of openings for graduates of lower secondary and upper secondary schools. As is easily seen, the number of applications has been rather stable during the entire observation period, whereas the number of openings has shown a remarkable increasing trend after 1955. This confirms our tentative conclusion in the previous paragraph that an increase in the excess demand for labor came from an increase in the demand for labor.

Changes in Real Output and Employment by Industry Group

The last topic of this paper is the investigation of what industries have made the largest contributions in creating job opportunities for the postwar era. Table 3 demonstrates annual rate of growth in real value added by industry group for three periods (1955–60, 1960–65 and 1965–68). For all of these periods the rate of growth has been the highest in Sector *M* (secondary) and the lowest in Sector *A* (primary). Among sub-groups of Sector *M*, manufacturing-mining has recorded the highest rate of growth. These facts may suggest that in the secondary industries, especially manufacturing, the demand for labor has increased most rapidly, whereas the primary has not contributed in creating job opportunities.

TABLE 3. ANNUAL RATE OF GROWTH IN REAL OUTPUT BY INDUSTRY GROUP

(%)

Periods	Industry Groups					
	A	*M*	(Man.)	(Con.)	(Fac.)	*S*
1955–60	0.4	20.8	24.0	20.1	13.1	14.3
1960–65	1.1	17.0	17.9	14.0	15.5	14.7
1965–68	4.3	17.4	19.6	17.0	9.7	15.4

Remarks: *A*=primary. Man.=manufacturing and mining.
Con.=construction. Fac.=transportation and utilities.
S=all others, mainly commerce and services.
Sources: Unpublished data by the EPA.

TABLE 4. EMPLOYMENT BY INDUSTRY GROUP: SIZE AND COMPOSITION

Years	Industry Groups					
	A	*M*	(Man.)	(Con.)	(Fac.)	*S*
	Number of Employees (thousand persons)					
1950	17 208	9 622	6 281	1 531	1 810	8 758
1955	16 111	11 269	7 437	1 783	2 049	11 879
1960	14 346	15 167	10 028	2 703	2 436	14 168
1965	11 731	18 448	12 019	3 376	3 053	17 412
1970	10 066	21 165	13 659	3 993	3 513	20 795
	Ratio to Total Employment (%)					
1950	48.3	27.0	17.6	4.3	5.1	24.6
1955	41.0	28.7	18.9	4.5	5.2	30.3
1960	32.8	34.7	23.0	6.2	5.6	32.4
1965	24.6	38.8	25.3	2.1	6.4	36.6
1970	19.3	40.7	26.3	7.7	6.8	40.0

Sources: See Table 1.

TABLE 5. INCREMENT IN NUMBER OF EMPLOYEES BY INDUSTRY GROUP AND ITS RATIO TO TOTAL INCREASE

Periods	Industry Groups					
	A	*M*	(Man.)	(Con.)	(Fac.)	*S*
	Increment in Employment (thousand persons)					
1950–55	—1 097	1 647	2 803	252	239	3 121
1955–60	—1 765	3 898	2 591	920	387	2 289
1960–65	—2 615	3 281	1 991	673	617	3 244
1965–70	—1 665	2 717	1 640	617	460	3 844
	Ratio to Total Increase (%)					
1950–55	—29.9	44.9	76.4	6.9	6.5	85.0
1955–60	—39.9	88.2	58.6	20.8	8.8	51.8
1960–65	—66.9	83.9	50.9	17.2	15.8	83.0
1965–70	—34.0	55.5	33.5	12.6	9.4	78.5

Sources: Table 4.

TABLE 6. ANNUAL RATE OF GROWTH IN EMPLOYMENT BY INDUSTRY GROUP

Periods	Industry Groups					
	A	*M*	(Man.)	(Con.)	(Fac.)	*S*
1950–55	—1.3	1.7	1.8	3.3	1.3	7.1
1955–60	—2.2	6.9	7.0	10.3	3.8	3.9
1960–65	—3.7	4.3	2.0	5.0	5.1	4.6
1965–70	—2.8	2.9	2.7	3.7	3.0	3.9

Sources: Table 4.

Table 4 gives the numbers employed, using data from the National Population Census by industry group. In Table 5 and in Table 6 the increment in the number of employees and the annual rate of growth in this number, respectively, are calculated both by industry group.[12] In these tables the following may be observed:

(1) The level of employment in Sector *A* has shown a rapidly decreasing trend during the entire period of observation. The number has decreased by 1,097,000–2,615,000 persons per half a decade. The annual rate of growth is-1.3—-3.7 per cent. Thus, it may be stated that primary industries have made contributions not in creating job opportunities but in supplying laborers to other industries.

(2) The number of employees in Sector *M* has increased rapidly: The increment for half a decade amounts to 1,647,000–3,898,000 persons. This increment occupies 45–88 per cent of the increase in employment of all industries. The annual rate of growth is 2–7 per cent.

(3) Among sub-groups of Sector *M*, the increase in employment of manufacturing-mining[13] has been made most conspicuously. The increment in this employment amounts to around 2,000,000 persons for half a decade. This increment occupies 34–76 per cent of the total increase.

(4) The number of employees in Sector *S* also has increased rapidly: The increment for half a decade 2,289,000–3,844,000 persons, which occupies 52–85 per cent of the total increase. The annual rate of growth in this employment is 3.9–7.1 per cent.

(5) As a consequence of these changes in sectoral employment, the composition of employment by industry group has changed remarkably. As is shown in Table 4, a ratio of Sector *A* employment decreased from 48.3 per cent in 1950 to 19.3 per cent in 1970. On the other hand, both the ratio of Sector *M* and that of Sector *S* increased to a great extent. That is, the ratio of Sector *M* was 27.0 per cent in 1950 and 40.7 per cent in 1970, and the ratio of Sector *S* was 24.6 per cent in 1950 and 40.0 per cent in 1970.

Changes in Number of Openings by Industry Group

In Chart 11 we saw that the number of openings has increased remarkably after 1955. Chart 12 depicts the number of openings by industry group.[14] Two findings are as follows:

(1) The number of openings has been the largest in Sector *M* and the second largest in Sector *S* during the entire period of observation. In 1970, for instance, the number amounts to 2,3000,000 persons and 800,000 persons, respectively, in Sector *M* and in Sector *S*. Among sub-groups of Sector *M*, manufacturing-mining has played a crucial role: in 1970 this industry group occupies 89 per cent of Sector *M* in the number of openings.

(2) The number of openings has increased very rapidly both in Sector *M* and in Sector *S*. The increase has been much bigger in Sector *M*. The number of openings of this sector, which was 240,000 persons in 1951, became 2,300,000 persons in 1970. On the other hand, the number has been almost stable in Sector *A* after a change between 1953 and 1954.[15]

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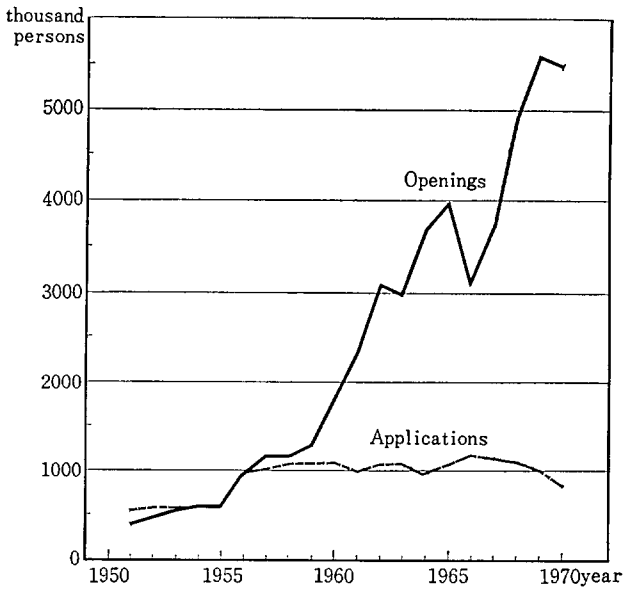
[12] For the prewar period, see the writer's mimeographed paper, " Long-Term Changes in the Labor Force by Industry Group in Japan," (Feb. 1971).

[13] The number of employees in mining has been decreasing. It was 450,000 persons, 430,000 persons, 290,000 persons and 270,000 persons respectively in 1955, 1960, 1965 and 1968.

[14] Coverage of the figures in Chart 12 is somewhat different from that in Chart 11. That is, figures in Chart 12 do not include those using the facilities of school placement services.

[15] A gap between 1953 and 1954 came probably from such a discrepancy in the original data that was pointed out in footnote for Chart 12.

CHART 11. NUMBER OF APPLICATIONS AND OPENINGS FOR GRADUATES OF LOWER SECONDARY AND UPPER SECONDARY SCHOOLS



Remarks: Figures for graduates of upper secondary schools until 1955 refer to applications and openings dealt with the Public Security Offices. In these figures since 1956 applications and openings dealt with by school masters are included. Actual figures are therefore not exactly comparable.
Sources: See Chart 2.

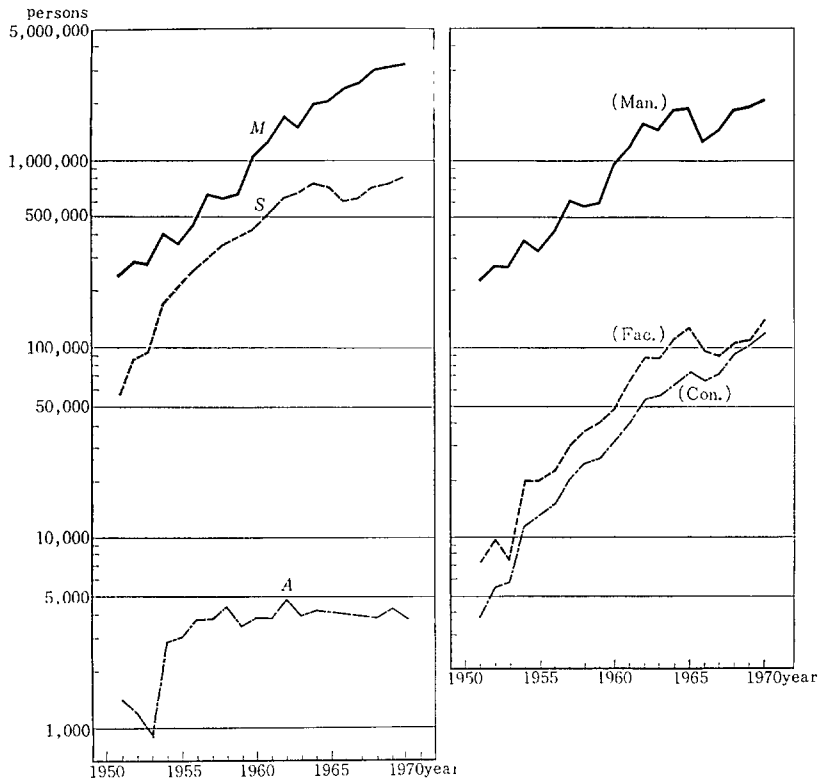
These two facts signify that the big increase in the demand for labor has been mainly dependent on Sector *M*, especially manufacturing, and on Sector *S* to a somewhat lesser extent.

III. *Concluding Remarks*

In the first half of Section I we studied the changes in some indexes for the excess demand for labor; that is, the rate of unemployment, the ratio of compensation claimants to the total of insured persons and of compensation claimants, the ratio of applications to openings, and the rate of growth in nominal wage rate. We concluded that the excess demand for labor increased remarkably during the latter half of the 1950's and the beginning of the next decade. In the second half of this section, we examined some statistics for wage differentials, and found that wage differentials decreased during around 1955–65. The larger wage increase in the traditional sector containing agriculture and small establishments came from a disappearance of surplus labor in this sector. The disappearance of surplus labor was made possible by the increasing excess demand for labor in the entire economy.

In the first half of Section II, we attempted to clarify the changes in labor supply and those in labor demand. Clarifications were made by using such proxy variables as the population aged fifteen years and over, the size of labor force, and the number of applications for labor supply and the rate of increase in real *GDP* and the number of openings for labor demand. Our conclusion was that a big increase in the excess demand for labor since around 1955 was dependent not on a decrease in labor supply but on an increase in labor demand. In the second half of this section, after investigating the changes in real output, employment and the number of openings by industry group, we recognised that such an

CHART 12. NUMBER OF OPENINGS FOR GRADUATES OF LOWER SECONDARY AND UPPER SECONDARY SCHOOLS BY INDUSTRY GROUP



Remarks: Figures refer to openings dealt with the Public Employment Offices only. Figures until 1953, however, do not include openings made under Para. 3 of Art. 25 of the Employment Security Law. Therefore this chart is not exactly continuous between 1953 and 1954.

Sources: See Chart 2.

increase in the demand for labor in the total economy was dependent upon the secondary sector, and to a lesser extent, on the tertiary sector. Then it may be concluded that a rapid expansion of the secondary and of the tertiary sectors since around 1955 caused a transition from a labor surplus to a labor shortage economy through increasing the demand for labor in these sectors. On the other hand, the primary sector has played a role of supplying laborers to other industries.

Such a transition from the labor surplus to the labor shortage economy has caused some economic consequences. One of the most important consequences must be inflation. According to our previous studies on the postwar inflation,[16] a spurt in the rate of growth in nominal wage rate, which came from a transformation in the labor market, has accelerated price increases. Such a relation between wage increases and price increases is much more

[16] Ryoshin Minami and Akira Ono, " Price Changes in a Dual Economy," in *Econometric Studies of the Contemporary Economy of Japan*, ed. by Richard F. Kosobud and Ryoshin Minami (Illinois, the University of Illinois Press, forthcoming).

important in the traditional sector. In this sector the rate of wage increase is much higher than in other industries, whereas the rate of productivity increase is much lower than in other industries. The rapid wage increase and the slow productivity increase in this sector has caused greater price increases compared with other sectors. A rapid increase in the consumer price index (1.5 per cent per year for 1955–60 and 7.7 per cent for 1960–70)[17] is mainly dependent on such a rapid increase in prices in the traditional sector. Conclusively inflation in postwar Japan is an inevitable cost of settlement of the unemployment problem which existed for a long time in this country.

[17] From the *Shōhisha Bukka-Shisū Nenpō* (*Annual Report of Consumer Price Index*) compiled by the Bureau of Statistics, Office of the Prime Minister.